

X and X¹ are independently selected from any anionic ligand; and
L and L¹ are independently selected from any neutral electron donor.

2. (Amended) The [A] compound according to claim 1, wherein the substituted alkyl includes one or more moieties [functional groups] selected from the group consisting of aryl, alcohol, thiol, ketone, aldehyde, ester, ether, amine, imine, amide, nitro, carboxylic acid, disulfide, carbonate, isocyanate, carbodiimide, carboalkoxy, and halogen.

3. (Amended) The [A] compound according to claim 1, wherein the substituted aryl includes one or more moieties [functional groups] selected from the group consisting of alkyl, aryl, alcohol, thiol, ketone, aldehyde, ester, ether, amine, imine, amide, nitro, carboxylic acid, disulfide, carbonate, isocyanate, carbodiimide, carboalkoxy, and halogen.

4. (Amended) The [A] compound according to claim 1, wherein R is selected from the group consisting of

- (a) hydrogen;
- (b) C₁-C₂₀ alkyl;
- (c) aryl;
- (d) C₁-C₂₀ alkyl substituted with one or more moieties [groups] selected from the group consisting of aryl, halide, hydroxy, C₁-C₂₀ alkoxy, and C₂-C₂₀ alkoxy carbonyl; and
- (e) aryl substituted with one or more moieties [groups] selected from the group consisting of C₁-C₂₀ alkyl, aryl, hydroxyl, C₁-C₅ alkoxy, amino, nitro, and halide.

5. (Amended) The [A] compound according to claim 4, wherein R is phenyl or phenyl substituted with a moiety [group] selected from the group consisting of chloride, bromide, iodide, fluoride, -NO₂, -NMe₂, methoxy, and methyl.

6. (Amended) The [A] compound according to claim 5, wherein R is phenyl.

7. (Amended) The [A] compound according to claim 4, wherein R is selected from the group consisting of hydrogen, methyl, ethyl, n-butyl, iso-propyl, -CH₂Cl, -CH₂CH₂CH₂OH, and -CH₂OAc.

8. (Amended) The [A] compound according to claim 1, wherein L and L¹ are independently selected from the group consisting of phosphine, sulfonated phosphine, phosphite, phosphinite, phosphonite, arsine, stibine, ether, amine, amide, sulfoxide, carboxyl, nitrosyl, pyridine, and thioether.

9. (Amended) The [A] compound according to claim 8, wherein L and L¹ are phosphines independently selected from PR³R⁴R⁵ wherein R³ is selected from the group consisting of secondary alkyl and cycloalkyl and wherein R⁴ and R⁵ are independently selected from the group consisting of aryl, C₁-C₁₀ primary alkyl, secondary alkyl, and cycloalkyl.

10. (Amended) The [A] compound according to claim 9, wherein L and L¹ are independently selected from the group consisting of -P(cyclohexyl)₃, -P(cyclopentyl)₃, and -P(isopropyl)₃.

11. (Amended) The [A] compound according to claim 8, wherein L and L¹ are both -P(phenyl)₃.

12. (Amended) The [A] compound according to claim 8, wherein L and L¹ are the same.

13. (Amended) The [A] compound according to claim 1, wherein X and X¹ are independently selected from the group consisting of halogen, hydrogen[;], unsubstituted moiety, and a substituted moiety wherein the moiety is selected from a group consisting of C₁-C₂₀ alkyl, aryl, C₁-C₂₀ alkoxide, aryloxide, C₃-C₂₀ alkylketone, aryldiketone, C₁-C₂₀ carboxylate, arylsulfonate, [or] C₁-C₂₀ alkylsulfonate, C₁-C₂₀ alkylthio, C₁-C₂₀ alkylsulfonyl, and [or] C₁-C₂₀ alkylsulfinyl, wherein the moiety substitution is selected from a group consisting of; each optionally substituted with] C₁-C₅ alkyl, halogen, C₁-C₅ alkoxy, unmodified phenyl, halogen substituted phenyl, C₁-C₅ alkyl substituted phenyl, and a C₁-C₅ alkoxy substituted phenyl. [or with a phenyl group optionally substituted with halogen, C₁-C₅ alkyl or C₁-C₅ alkoxy;]

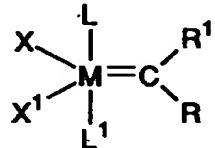
14. (Amended) The [A] compound according to claim 1 [13], wherein X and X¹ are independently selected from Cl, Br, I, H, unsubstituted moiety, and substituted moiety wherein the moiety is selected from a group consisting of; benzoate, C₁-C₅ carboxylate, C₁-C₅ alkyl, phenoxy, C₁-C₅ alkoxy, C₁-C₅ alkylthio, arylsulfonate, and [or] C₁-C₅ alkyl sulfonate wherein the moiety substitution is selected from a group consisting of C₁-C₅ alkyl, unmodified phenyl,

halogen substituted phenyl, C₁-C₅ alkyl substituted phenyl, and C₁-C₅ alkoxy substituted phenyl; each optionally substituted with C₁-C₅ alkyl or a phenyl group optionally substituted with halogen, C₁-C₅ alkyl or C₁-C₅ alkoxy].

15. (Amended) The [A] compound according to claim 13 [14], wherein X and X¹ are independently selected from the group consisting of Cl, CF₃CO₂, CH₃CO₂, CFH₂CO₂, (CH₃)₃CO, (CF₃)₂(CH₃)CO, (CF₃)(CH₃)₂CO, PhO, MeO, EtO, tosylate, mesylate, and trifluoromethanesulfonate.

16. (Amended) The [A] compound according to claim 15, wherein X and X¹ are both Cl.

17. (Amended) A compound of the formula



wherein:

M is selected from the group consisting of Os and Ru;

R¹ is hydrogen;

R is a group selected from the group consisting of

(a) hydrogen;

(b) C₁-C₄ alkyl;

(c) phenyl;

(d) C₁-C₄ alkyl substituted with one or more moieties [groups] selected from the group consisting of halide, hydroxy, and C₂-C₅ alkoxy carbonyl; and

(e) phenyl substituted with one or more moieties [groups] selected from the group consisting of C₁-C₅ alkyl, C₁-C₅ alkoxy, amino, nitro, and halide;

X and X¹ are independently selected from any anionic ligand; and

L and L¹ are independently phosphines of the formula PR³R⁴R⁵ wherein R³ is selected from the group consisting of secondary alkyl and cycloalkyl and wherein R⁴ and R⁵ are independently selected from aryl, C₁-C₁₀ primary alkyl, secondary alkyl and cycloalkyl.

18. (Amended) The [A] compound according to claim 17, wherein the substituted phenyl is para-substituted.

19. (Amended) The [A] compound according to claim 18, wherein R is phenyl or phenyl substituted with a moiety [group] selected from the group consisting of chloride, bromide, iodide, fluoride, -NO₂, -NMe₂, methoxy, and methyl.

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20. (Amended) The [A] compound according to claim 19, wherein R is phenyl.

21. (Amended) The [A] compound according to claim 17, wherein R is selected from the group consisting of hydrogen, methyl, ethyl, n-butyl, iso-propyl, -CH₂Cl, -CH₂CH₂CH₂OH, and -CH₂OAc.

22. (Amended) The [A] compound according to claim 17, wherein L and L¹ are independently [independantly] selected from the group consisting of -P(cyclohexyl)₃, -P(cyclopentyl)₃, and -P(isopropyl)₃.

23. (Amended) The [A] compound according to claim 17, wherein X and X¹ are both Cl.

24. (Amended) The [A] compound according to claim 17, wherein R is phenyl, M is Ru, X and X¹ are both Cl, and L and L¹ are the same and are selected from the group consisting of -P(cyclohexyl)₃, -P(cyclopentyl)₃, and -P(isopropyl)₃.

REMARKS

The present invention relates to ruthenium and osmium metathesis catalysts. Claims 1-42 were originally filed with the application. In the first office action in the parent case, the Examiner determined that claims 1-24 and 37-38 are drawn to a carbene complexes and methods for making the same (Group I), that claims 25-29 and 40-41 are drawn to vinylidene complexes and methods for making the same (Group II), and claims 30-36 relate to various methods for use for the carbene or vinylidene complexes (Groups III-VIII).